



**UNITED STATES DEPARTMENT OF COMMERCE  
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/843,124	04/25/97	KAWASE	3442

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IM61/1208

EXAMINER  
KUNEMUND, R

ART UNIT	PAPER NUMBER
1765	12

DATE MAILED: 12/08/98

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

## Office Action Summary

Application No.

Applicant(s)

Examiner

Group Art Unit

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

### Period for Response

A SHORTENED STATUTORY PERIOD FOR RESPONSE IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a response be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for response is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to respond within the set or extended period for response will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

### Status

- ☒ Responsive to communication(s) filed on 11/25/98
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

### Disposition of Claims

- ☒ Claim(s) 1 to 23 is/are pending in the application.
- Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- ☒ Claim(s) 1 to 5, and 8 to 23 is/are rejected.
- ☒ Claim(s) 6 and 7 is/are objected to.
- ☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement.

### Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been received.
- ☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.
- ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

\*Certified copies not received: \_\_\_\_\_

### Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_ ☐ Interview Summary, PTO-413
- ☐ Notice of References Cited, PTO-892 ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948 ☐ Other \_\_\_\_\_

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The Rejections

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 3, 19, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bourret-Courchesne in view of Yamamoto.

The Bourret-Courchesne reference teaches a growth of gallium arsenide from a melt. In a crucible of quartz a charge is placed. The charge is solid polycrystalline GaAs with boric oxide. The crucible is then heated to cause melting. Due to the properties of the boric oxide, it melts first and stays on top of the melt, while the remaining solid is melted. Once, the melt is formed the single crystal can be formed by seed pulling or bridgeman techniques, note entire reference. The sole difference between the instant claims and the prior art is the addition of a dopant.

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However, the Yamamoto reference teaches that carbon is a dopant for GaAs and is added to the original charge in solid form prior to any melting. It would have been obvious to one of ordinary skill in the art to modify the Bourret-Courchesne process by the teachings of the Yamamoto reference to add carbon as a dopant in order to produce the desired E12 characteristics.

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bourret-Courchesne in view of Yamamoto and Yamashita.

The Bourret-Courchesne and Yamamoto reference are relied on for the same reasons as stated, supra, and differ from the instant claims in the addition of water to the boric oxide. However, the Yamashita reference teaches that when growing gallium arsenide from a melt, the addition of water to boric oxide. It would have been obvious to one of ordinary skill to modify the Bourret-Courchesne process by the Yamashita reference to add water to the boric oxide in order to control the carbon concentrations in the melt.

Claims 8 to 18, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bourret-Courchesne in view of Yamamoto and Yamashita.

The Bourret-Courchesne, Yamashita and Yamamoto reference are relied on for the same reasons as stated, supra, and differ from the instant claims in the type of carbon and melt times. However, in the absence of unobvious results, it would have been obvious to one of ordinary skill in the art to determine through routine experimentation the optimum, operable type of carbon source and melt times in the prior art in order to uniformly dope the melt and allow the melt to achieve a uniform consistence.

1. Claims 6 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Applicants' Arguments

Applicant's arguments with respect to claims 1 to 23 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Kunemund whose telephone number is (703) 308-1091. The examiner can normally be reached on Monday through Friday from 7:00 to 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ben Utech, can be reached on (703) 308-3324. The fax phone number for this Group is (703) 305-3599.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.



RMK

December 3, 1998

ROBERT KUNEMUND  
PRIMARY PATENT EXAMINER  
A.U. 41765